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Polyorganosiloxane-based composition for forming film comprises two products obtained by hydrolyzing and condensing silane compound in presence of acid and alkali catalysts respectively

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Number of Countries: 029 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1090967	A2	20010411	EP 2000121101	A	20000928	200148	B
JP 2001164186	A	20010619	JP 2000220271	A	20000721	200150	
KR 2001077882	A	20010820	KR 200056972	A	20000928	200212	
US 6410150	B1	20020625	US 2000669859	A	20000927	200246	
TW 530083	A	20030501	TW 2000120207	A	20000929	200373	

Priority Applications (No Type Date): JP 99275553 A 19990929

Patent Details:

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Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

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JP 2001164186 A 14 C09D-183/04

KR 2001077882-A C08L-083/04

US 6410150 B1 B32B-009/04

TW 530083 A C09D-183/04

Abstract (Basic): EP 1090967 A2

NOVELTY - A composition comprises a product of hydrolysis and condensation obtained by hydrolyzing and condensing at least one silane

compound, in the presence of an alkali catalyst and a product of hydrolysis and condensation obtained by hydrolyzing and condensing at

least one silane compound in the presence of an acid catalyst.

DETAILED DESCRIPTION - A composition comprises (a) a product

obtained by hydrolyzing and condensing at least one silane compound of

formula $R_aSi(OR_1)_4-a$ (I), $Si(OR_2)_4$ (II) or
 $R_3b(R_4O)_3-bSi-(R_7)d-Si(OR_5)_3-cR_6c$ (III) in the presence of an alkali

catalyst and (b) a product obtained by hydrolyzing and condensing (I),

(II) or (III) in the presence of an acid catalyst.

$R=H$, fluorine or monovalent organic group;

$R_1 - R_6=$ monovalent organic group;

$R_7=O$, phenylene or $-(CH_2)_n-$;

$n=1 - 6$;

$a=1$ or 2 ;

b and $c=0 - 2$; and

$d=0$ or 1 .

INDEPENDENT CLAIMS are also included for the following: (A) forming

a film by applying the composition on a substrate and then heating the

composition; and (B) a semiconductor device having the insulating film.

USE - For forming film, preferably insulating film (claimed), used

as coating film for semiconductor devices such as LSIs, system LSIs,

DRAMs, SDRAMs, RDRAMs and D-RDRAMs; protective films such as surface

coat films for semiconductor devices; interlayer insulating films for

multilayered printed circuit boards; and protective or insulating films

for liquid-crystal display devices. Also, useful in application in which the composition is applied to silicon wafer, SiO_2 wafer, SiN wafer, glasses, ceramics and metals.

ADVANTAGE - The film has a low dielectric constant, high modulus of

elasticity, low water absorption, good storage stability and low film

density.

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Technology Focus:

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Composition: A weight average molecular weight as determined by GPC (refractive index,

viscosity or light scattering) of component (a) is 50,000 - 10,000,000

and of component (b) is 500 - 300,000. Component (a) contains a product

of hydrolysis of condensation of (II) (5 - 75 wt.%) (in terms of the product of complete hydrolysis and condensation). Component (a) is the

product of hydrolysis and condensation of (I) and (II). The composition

comprises (parts by weight) component (a) (100) and component (b)

(1 -

900) (in terms of the product of complete hydrolysis and condensation)
and has a pH of at most 7.

Title Terms: BASED; COMPOSITION; FORMING; FILM; COMPRISE; TWO; PRODUCT; OBTAIN; CONDENSATION; SILANE; COMPOUND; PRESENCE; ACID; ALKALI; CATALYST;
RESPECTIVE

Derwent Class: A26; A85; G02; L03; P73; U11
International Patent Class (Main): B32B-009/04; C08L-083/04; C09D-183/04
International Patent Class (Additional): C08G-077/08; C09D-183/02; C09D-183/14; H01L-021/312
File Segment: CPI; EPI; EngPI
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G02-A05; G02-A05B; L03-H04E1; L04-C22
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Polymer Indexing (PS):
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D87 D88 D89 D90 D91 D92 D93 F83 F85 F86 F87 F- 7A; P1445-R F81 Si
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L9999 L2664 L2506
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G2288

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 K9483-R ; K9676-R; K9687 K9676; K9712 K9676; N9999 N7147 N7034 N7023;
 B9999 B5094 B4977 B4740; B9999 B4444 B4240; B9999 B3554-R; Q9999
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 K9585 K9483; K9610 K9483; K9494 K9483; K9529 K9483; K9552
 K9483; B9999 B3214 B3203 B3190; B9999 B3930-R B3838 B3747; B9999 B3509
 B3485 B3372; B9999 B3532 B3372; B9999 B4831-R B4740; N9999
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 K9847 K9790
 008 018; D67; R01713 D00 H- N- 5A; C999 C102 C000; C999 C306
 009 018; D60; R00247 D01 D11 D10 D50 D60 D82 F36 F35; R00901 G0760
 G0022 D01 D12 D10 D51 D53 D59 D60 D84 F37 F35 E00 E01; C999
 C102 C000; C999 C306; C999 C340
 010 018; D01 D11 D10 D50 D86 F27 F26 F34 D84; R00245 D01 D11 D10
 D50 D82 F27 F26; A999 A475; A999 A771
 011 018; D01 D11 D10 D50 D87 F23; A999 A475; A999 A771
 Derwent Registry Numbers: 0137-U; 0245-U; 0247-U; 0901-U; 1713-U; 1740-U
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